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The Mineral Industry of Italy

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The Mineral Industry of Italy

By Roman V. Sondermayer[1]

As in the past, Italy was an important processor of imported raw minerals and mineral fuels in Europe during 1984, but domestic production of a large number of commodities remained modest by world standards. The most prominent minerals and related products, expressed in approximate percentages of world production, were pumice 50% to 51%; feldspar 23% to 24%; cement and bentonite 4%; and fluorspar, asbestos, and magnesite, 3% to 4%, each.

The mineral industry of Italy in general showed a positive trend during 1984. The overall mineral industry production index was 2.3% higher than in 1983, with the largest increases shown by the nonmetallic sector, 3.7%, and by natural gas, 6.1%. This was offset by a drop in metallic mining of 5.1%. Recovery of the country's economy, with a growth in the overall industrial index of 3.1%, had a positive impact on the mineral industry.

The mineral industry faced increased costs resulting from higher energy prices, increases of wages and fringe benefits, and operation of nonprofitable facilities by state entities. Consequently, the mineral industry made all possible efforts to lower production costs by increasing productivity, lowering consumption of energy, and cutting exploration expenses. The cuts in exploration costs were deep and resulted in exploration that was below sufficient levels for maintaining present production of nonfuel minerals. Only producers of crude petroleum and natural gas managed to finance properly their exploration with their own funds. Because exploration for nonfuel minerals was declining, the Italian state, based on Public Law 752 of 1982 and on Public Law 246 of 1984, renewed support for exploration with a budget of about $444 million.[2]

The major events related to the mineral industry included closure of the small Fenice Capanne copper mine, closure of the Niccioleta pyrite mine, discovery of new barite reserves at Felice, and streamlining of the petroleum refining sector.

PRODUCTION

The mineral industry of Italy, including processing of minerals and mineral fuels, showed mixed results. The mining and processing sectors were owned by the Government and by private companies. The Government with Ente Nazionale Idrocarburi (ENI) and its affiliates Società per Azioni Minero-Metallurgiche (SAMIM) and Azienda Generali Italiana Petroli S.p.A. (AGIP); Finanziaria Siderurgica S.p.A. (Finsider) with its subsidiaries Nuovo Italsider S.p.A., Dalmine S.p.A., Acciaieria Piombino, and Nuova Sias; and the Government-owned potash companies controlled most of the minerals. The principal privately owned companies of the mineral industry were Società Mineraria e Metallurgica di Pertusola S.A. (Pertusola) in lead and zinc, Acciaierie Ferriere Lombarde Falck (Falck) in steel, and major foreign oil and gas companies.

Table 1.—Italy: Production of mineral commodities[1]

(Metric tons unless otherwise specified)

Commodity	1980	1981	1982	1983	1984[p]
METALS					
Aluminum:					
Bauxite	23,260	19,000	23,010	23,000	--
Alumina	900,373	786,357	698,329	465,671	607,274
Metal:					
Primary	271,211	273,845	232,861	195,694	230,207
Secondary[e]	266,000	250,000	242,000	240,000	250,000
Antimony:					
Mine output, metal content	713	696	339	--	508
Metal, total	732	792	1,047	720	1,121
Bismuth metal	43	15	28	23	26
Cadmium metal, smelter	568	489	475	385	452
Copper:					
Mine output, metal content	604	748	138	1,538	875
Metal, refined, all kinds	12,200	23,700	19,600	31,200	40,000
Iron and steel:					
Iron ore and concentrate:[3]					
Gross weight thousand tons	185	123	3	(5)	--
Iron content do.	73	50	1	(5)	--
Metal:					
Pig iron do.	12,149	12,260	11,537	10,341	11,628
Ferroalloys:					
Blast furnace, spiegeleisen	4,990	832	957	494	935
Electric furnace:					
Ferromanganese[4]	[r]83,092	71,770	73,353	61,847	50,476
Silicomanganese	44,914	54,563	58,118	37,244	72,779
Ferrosilicon	71,857	55,144	63,947	51,913	71,157
Silicon metal[6]	15,000	15,000	15,000	[r]14,000	14,000
Ferrochromium	41,150	10,333	36,541	11,429	12,265
Other	14,679	12,252	11,552	42,219	50,755
Total	275,682	219,894	259,468	219,146	272,367
Steel, crude thousand tons	26,501	24,777	23,981	21,674	24,061
Semimanufactures:					
Wire rod do.	1,933	1,935	2,098	2,027	NA
Sections do.	8,782	7,812	6,909	6,874	NA
Plates and sheets do.	5,895	6,453	5,021	8,409	NA
Hoop and strip do.	871	781	593	461	NA
Railway track material do.	217	216	240	234	NA
Ingots, semimanufactures, solids for tubes do.	1,089	1,276	903	957	NA
Other do.	859	1,276	1,784	1,515	NA
Total do.	19,646	19,749	17,548	20,477	NA
Castings and forgings do.	747	783	614	453	NA
Cold rolled sheet do.	2,690	2,646	2,595	3,892	NA
Seamless tubes do.	880	1,094	1,010	753	NA
Lead:					
Mine output, metal content	22,879	21,300	16,187	[r]3,561	20,883
Metal, refined:					
Primary	42,057	35,556	36,360	36,955	37,558
Secondary	91,600	97,400	97,300	90,000	90,000
Magnesium metal, primary	9,676	10,800	9,943	7,687	7,491
Manganese, mine output:					
Gross weight	9,165	8,756	8,727	7,205	9,582
Metal content	2,763	2,614	2,618	2,215	2,875
Mercury metal 76-pound flasks	96	7,527	4,612	--	--
Silver metal thousand troy ounces	1,366	1,768	1,791	2,361	2,858
Zinc:					
Mine output, metal content	58,417	43,906	39,601	42,944	42,288
Metal, primary	206,430	180,903	158,560	155,893	169,672
NONMETALS					
Asbestos	157,794	137,086	116,410	139,054	147,272
Barite	203,038	177,005	180,022	139,090	107,128
Bromine[6]	590	600	600	500	500
Cement, hydraulic thousand tons	41,772	41,553	39,728	39,216	[e]40,000
Clays, crude:					
Bentonite do.	332	277	237	297	311
Refractory excluding kaolinitic earth do.	226	270	[e]250	[e]220	230
Fuller's earth do.	4	5	[e]5	[e]5	[e]6
Kaolin do.	89	74	53	50	53
Kaolinitic earth do.	27	31	30	25	25
Diatomite[e]	30,000	25,000	20,000	25,000	28,000
Feldspar	344,301	428,485	783,411	826,856	985,573

See footnotes at end of table.

Table 1.—Italy: Production of mineral commodities[1] —Continued

(Metric tons unless otherwise specified)

Commodity	1980	1981	1982	1983	1984[p]
NONMETALS —Continued					
Fluorspar:					
Acid-grade	124,774	128,838	134,127	102,910	110,330
Metallurgical-grade	26,229	35,397	32,822	74,760	77,931
Total	[r]151,003	164,235	166,949	177,670	188,261
Graphite, all grades	3,957	3,535	3,210	2,299	--
Gypsum[e] thousand tons	4,200	[5]4,820	1,600	[5]1,388	1,300
Lime, hydrated and quicklime do.	2,365	2,307	[e]2,300	[e]2,200	[e]2,100
Nitrogen: N content of ammonia do.	1,397	1,207	1,406	1,060	1,100
Perlite[e]	90,000	85,000	80,000	75,000	80,000
Pigments, mineral: Iron oxides, natural[e]	1,000	900	800	900	800
Potash, crude salts:					
Gross weight thousand tons	1,302	1,418	1,460	1,674	1,481
K_2O equivalent do.	156	142	146	184	162
Pumice and related materials:					
Pumice and pumiceous lapilli[e] do.	571	600	750	700	650
Pozzolan[e] do.	5,156	[r]5,509	5,500	5,000	5,500
Pyrite, all types, gross weight do.	859	681	667	646	443
Salt:					
Marine, crude[e] do.	1,300	[5]964	1,000	1,100	1,000
Rock and brine do.	3,997	3,610	3,605	3,454	3,255
Sodium and potassium compounds:					
Caustic soda	9,531	8,484	[e]9,000	[e]9,000	[e]8,000
Sodium carbonate[e] thousand tons	95	95	90	85	90
Sodium sulfate[e] do.	100	90	85	90	80
Stone, marble in blocks, all kinds[e] [6] do.	[5]2,200	2,100	2,000	1,900	2,000
Strontium minerals: Celestite	1,053	6,697	3,272	[e]3,300	[e]3,400
Sulfur:					
Gross weight of ore thousand tons	101	96	88	41	20
Recovered as elemental and in compounds:					
Elemental from ore do.	23	20	10	9	8
S content of pyrites do.	331	261	269	271	282
Byproduct, oil refining do.	30	25	10	10	10
Byproduct, other sources[e] do.	220	205	200	200	190
Total do.	604	511	489	490	490
Talc and related materials	165,905	163,390	163,970	158,974	142,727
MINERAL FUELS AND RELATED MATERIALS					
Asphalt and bituminous rock, natural[e]	[5]117,893	100,000	105,000	100,000	110,000
Carbon black[e]	170,000	170,000	160,000	150,000	160,000
Coal: Lignite thousand tons	1,933	1,958	1,913	1,737	1,806
Coke, metallurgical do.	8,266	8,071	7,335	6,419	[e]6,500
Gas, natural: Marketed million cubic feet	442,543	495,944	512,377	458,930	[e]485,000
Natural gas liquids: thousand 42-gallon barrels	150	140	140	130	150
Petroleum:					
Crude do.	12,264	10,532	11,881	14,961	15,635
Refinery products:					
Liquefied petroleum gases do.	(7)	22,132	21,518	22,132	21,286
Gasoline, all kinds do.	124,550	129,116	132,693	125,732	123,522
Naphtha do.	(7)	28,490	24,738	24,269	22,876
Jet fuel do.	14,720	9,208	8,312	7,880	8,664
Kerosine do.	18,747	21,901	23,405	18,933	18,514
Distillate fuel oil do.	190,603	189,230	181,822	172,288	171,557
Residual fuel oil do.	244,935	249,017	212,793	190,322	173,466
Lubricants do.	7,196	6,356	(7)	(7)	(7)
Other do.	76,105	39,781	39,326	41,300	40,957
Refinery fuel and losses do.	42,231	45,806	48,151	46,167	48,631
Total do.	719,087	741,037	692,758	649,023	629,473

[e] Estimated. [p] Preliminary. [r] Revised. NA Not available.

[1] Table includes data available through Aug. 28, 1984.

[2] Excludes pelletized iron oxide derived from pyrite.

[3] Revised to zero.

[4] Includes blast furnace ferromanganese.

[5] Reported figure.

[6] In addition to marble, Italy produced a large variety of stone. Production was not reported.

[7] Included with other refinery products.

TRADE

Based on preliminary results, Italy's trade balance in minerals, fuels, and related commodities remained negative. Approximately 30% of the total value of the country's imports were minerals and fuels. The value of the mineral exports, mostly in processed form, was about 20% of the value of the total country exports. Trade with the United States remained insignificant for the economies of both countries.

Table 2.—Italy: Exports of selected mineral commodities[1]

(Metric tons unless otherwise specified)

Commodity	1982	1983	Destinations, 1983	
			United States	Other (principal)
METALS				
Aluminum:				
Ore and concentrate	8,240	5,053	--	Greece 3,307; Turkey 1,000.
Oxides and hydroxides	269,988	174,335	63	Netherlands 93,766; Norway 45,349.
Metal including alloys:				
Scrap	3,380	5,721	36	France 2,791; West Germany 1,540.
Unwrought	54,115	41,282	2,418	West Germany 10,241; Japan 9,467.
Semimanufactures	105,904	117,525	7,712	West Germany 28,162; France 17,293.
Antimony: Metal including alloys, all forms	4	51	NA	NA.
Beryllium: Metal including alloys, all forms	(2)	15	--	All to Finland.
Bismuth: Metal including alloys, all forms	17	6	NA	NA.
Cadmium: Metal including alloys, all forms	79	504	NA	Belgium-Luxembourg 399.
Cesium and rubidium: Metal including alloys, all forms	3	12	NA	Portugal 6.
Chromium:				
Ore and concentrate	436	680	--	France 194; Switzerland 130.
Metal including alloys, all forms	3	30	NA	NA.
Cobalt:				
Ore and concentrate	28	--	--	
Oxides and hydroxides	29	8	--	Belgium-Luxembourg 4.
Metal including alloys, all forms	63	35	NA	United Kingdom 8.
Columbium and tantalum: Metal including alloys, all forms:				
Columbium (niobium)	1	(2)	NA	NA.
Tantalum	54	14	--	West Germany 8.
Copper:				
Ore and concentrate	657	1,970	--	Spain 1,969.
Matte and speiss including cement copper	344	2,890	--	Belgium-Luxembourg 1,620; Spain 1,238.
Metal including alloys:				
Scrap	19,042	20,305	517	West Germany 12,522; France 2,712.
Unwrought	8,564	13,282	1,018	United Kingdom 4,006; Iran 3,160.
Semimanufactures	96,365	109,279	3,076	France 26,373; West Germany 18,748.
Gallium: Metal including alloys, all forms	5	14	8	NA.
Germanium: Metal including alloys, all forms	1	5	NA	NA.
Gold: Metal including alloys, unwrought and partly wrought, troy ounces	49,995	87,290	13,182	Switzerland 19,195; France 7,106.
Iron and steel:				
Iron ore and concentrate:				
Excluding roasted pyrite	160	87	--	Venezuela 60.
Pyrite, roasted	39,218	28,679	--	France 22,479.
Metal:				
Scrap	17,149	17,560	44	West Germany 8,154; France 7,613.
Pig iron, cast iron, related materials	9,556	33,165	511	Turkey 7,521; Egypt 5,568.
Ferroalloys:				
Ferrochromium	9,109	23,101	227	West Germany 11,585.
Ferromanganese	2,805	1,392	--	Switzerland 1,001.
Ferromolydenum	221	4	NA	NA.
Ferronickel	119	1	NA	NA.
Ferrosilicochromium	86	395	NA	France 326.
Ferrosilicomanganese	3,027	5,360	NA	France 3,465; Switzerland 1,095.
Ferrosilicon	4,361	6,966	379	West Germany 2,771; France 2,318.
Silicon metal	r5,949	6,108	NA	West Germany 2,681; Hungary 1,107.
Unspecified	r4,677	5,231	303	West Germany 780; France 699.
Steel, primary forms, thousand tons	906	982	79	France 138; Argentina 133.

See footnotes at end of table.

Table 2.—Italy: Exports of selected mineral commodities[1] —Continued

(Metric tons unless otherwise specified)

Commodity	1982	1983	Destinations, 1983	
			United States	Other (principal)
METALS —Continued				
Iron and steel —Continued				
Metal —Continued				
Semimanufactures:				
Bars, rods, angles, shapes sections thousand tons	2,173	2,527	17	West Germany 965; France 662.
Universals, plates, sheets do.	1,574	1,501	128	France 321; U.S.S.R. 298; West Germany 167.
Hoop and strip do.	102	111	1	France 30; U.S.S.R. 18.
Rails and accessories do.	12	39	(2)	Egypt 30; Switzerland 3.
Wire do.	104	104	6	France 30; West Germany 19.
Tubes, pipes, fittings do.	2,072	1,899	182	U.S.S.R. 820; West Germany 167; France 144.
Castings and forgings, rough do.	51	49	(2)	Yugoslavia 11; West Germany 7.
Lead:				
Ore and concentrate	21,549	21,023	--	Spain 7,500; Austria 4,045.
Oxides	1,348	1,660	--	U.S.S.R. 646; Romania 550.
Metal including alloys:				
Scrap	496	1,168	--	Belgium-Luxembourg 640; Spain 300.
Unwrought	4,472	5,896	359	Libya 3,103; Turkey 1,767.
Semimanufactures	429	718	1	Libya 208; Saudi Arabia 169.
Magnesium: Metal including alloys:				
Scrap	1,059	1,463	612	West Germany 662.
Unwrought	6,308	7,378	382	West Germany 4,339; Austria 1,015.
Semimanufactures	385	528	111	France 172; West Germany 64.
Manganese:				
Ore and concentrate, metallurgical-grade	1,345	1,009	--	France 984.
Oxides	21	206	--	Belgium-Luxembourg 106.
Metal including alloys, all forms	13	18	NA	NA.
Mercury 76-pound flasks	2,862	11,020	NA	Netherlands 8,346.
Molybdenum:				
Ore and concentrate	348	298	--	Austria 167; Netherlands 131.
Metal including alloys, all forms	20	150	NA	France 121; West Germany 23.
Nickel:				
Matte and speiss	440	294	--	West Germany 264.
Ash and residue containing nickel	162	386	--	Austria 230.
Metal including alloys:				
Scrap	290	165	18	West Germany 74.
Unwrought	210	713	--	West Germany 380; Netherlands 199.
Semimanufactures	618	776	7	Switzerland 202; West Germany 114.
Platinum-group metals: Metals including alloys, unwrought and partly wrought troy ounces	60,026	164,646	68,707	West Germany 32,216; United Kingdom 24,146.
Selenium, elemental	3	6	NA	NA.
Silicon, high-purity	175	220	95	West Germany 58; Japan 51.
Silver: Metal including alloys, unwrought and partly wrought thousand troy ounces	1,833	4,270	NA	Switzerland 3,585.
Tin:				
Ore and concentrate	28	26	--	All to Austria.
Metal including alloys:				
Scrap	51	57	--	Netherlands 28; Denmark 12.
Unwrought	345	460	--	United Kingdom 147; undetermined 209.
Semimanufactures	125	165	--	U.S.S.R. 101; Greece 20.
Titanium:				
Ore and concentrate	1,174	536	--	Romania 298.
Oxides	1,597	2,273	568	Republic of Korea 1,008.
Metal including alloys:				
Scrap	9	23	NA	NA.
Unwrought	9	67	NA	West Germany 46.
Semimanufactures	115	94	4	India 66.
Tungsten: Metal including alloys:				
Scrap	32	27	NA	France 8; Belgium-Luxembourg 7.
Unwrought	9	24	NA	Bulgaria 12.
Semimanufactures	24	34	(3)	Mainly to West Germany.
Vanadium:				
Oxides and hydroxides	26	96	--	West Germany 67.
Ash and residue containing vanadium	1,484	1,956	--	West Germany 1,720.
Metal including alloys, all forms	4	13	NA	West Germany 8.

See footnotes at end of table.

Table 2.—Italy: Exports of selected mineral commodities[1] —Continued

(Metric tons unless otherwise specified)

Commodity	1982	1983	Destinations, 1983	
			United States	Other (principal)
METALS —Continued				
Zinc:				
Ore and concentrate	7,866	4,320	--	Austria 3,302; France 1,000.
Blue powder	1,086	620	--	France 211; Belgium-Luxembourg 185.
Matte	4,470	68	NA	NA.
Metal including alloys:				
Scrap	2,927	3,278	--	West Germany 3,018.
Unwrought	25,455	35,796	8,596	Netherlands 11,326; Turkey 3,193.
Semimanufactures	2,577	2,093	1	France 1,146.
Zirconium:				
Ore and concentrate	5,305	5,062	NA	Hungary 4,727.
Metal including alloys, all forms	11	61	1	NA.
NONMETALS				
Abrasives, n.e.s.:				
Natural: Corundum, emery, pumice, etc	169,494	129,330	174	United Kingdom 66,753; Algeria 40,101.
Artificial:				
Corundum	1,505	2,623	1	Bulgaria 1,259; Austria 562.
Silicon carbide	10,412	8,240	NA	West Germany 2,788; France 1,322.
Dust and powder of precious and semiprecious stones including diamond kilograms	132	483	5	U.S.S.R. 153; Switzerland 12.
Grinding and polishing wheels andd stones	21,491	23,116	721	France 2,888; Saudi Arabia 2,296.
Asbestos, crude	48,647	61,164	(2)	West Germany 15,221; France 12,268.
Barite and witherite	71,914	46,831	14	Egypt 17,111; Netherlands 9,330.
Boron materials: Crude natural borates	2,665	1,281	--	Belgium-Luxembourg 692, Yugoslavia 569.
Bromine	25	10	NA	NA.
Cement	552,275	589,351	93	Libya 246,225; Switzerland 104,406.
Chalk	581	4,997	20	West Germany 4,639.
Clays, crude:				
Bentonite	21,261	40,798	NA	France 11,085; Norway 8,388.
Chamotte earth	2,707	2,572	NA	Tunisia 1,500.
Kaolin	23,859	19,981	NA	France 16,681.
Unspecified	2,479	2,713	64	Greece 272; Libya 265.
Cryolite and chiolite	3	56	--	China 25; West Germany 22.
Diamond:				
Gem, not set or strung carats	4,294,952	2,054	NA	Switzerland 900.
Industrial stones do	28,740	9,300	--	Yugoslavia 6,836.
Diatomite and other infusorial earth	2,586	3,231	--	Austria 922; Yugoslavia 595.
Feldspar, fluorspar, related materials	98,260	98,037	36,505	West Germany 26,439; Switzerland 13,111.
Fertilizer materials:				
Crude, n.e.s	17,444	22,586	--	France 10,087; Egypt 3,219.
Manufactured:				
Ammonia	34,597	46,775	--	Israel 31,987; Turkey 14,299.
Nitrogenous	383,218	901,631	--	Turkey 197,945; Greece 174,635.
Phosphatic	2,191	710	--	Switzerland 475.
Potassic	39,895	87,324	--	Japan 22,600; Algeria 20,500.
Unspecified and mixed	338,914	581,426	--	West Germany 113,484; France 75,466.
Graphite, natural	1,823	2,743	--	Austria 1,211; France 1,173.
Gypsum and plaster	11,268	12,167	2	Switzerland 9,086.
Kyanite and related materials	64	46	NA	NA.
Lime	50,834	35,936	--	Switzerland 33,790.
Magnesium compounds:				
Magnesite	37,504	27,004	63	Austria 14,500; Netherlands 7,043.
Oxides and hydroxides	1,059	37,959	NA	West Germany 17,649; Spain 9,136.
Other	--	2,800	NA	Saudi Arabia 1,500.
Mica:				
Crude including splittings and waste	1,223	498	--	France 155; Libya 107.
Worked including agglomerated splittings	13	23	--	Spain 4; Yugoslavia 4.
Phosphates, crude	5,273	398	17	Yugoslavia 141; Switzerland 101.
Pigments, mineral:				
Natural, crude	232	285	NA	Egypt 66.
Iron oxides and hydroxides, processed	4,202	5,502	8	France 2,539; Yugoslavia 444.
Potassium salts, crude	51	4	(2)	Malta 3.
Precious and semiprecious stones other than diamond:				
Natural kilograms	4,024	2,521	217	West Germany 117; Singapore 110.
Synthetic do	333	401	NA	Saudi Arabia 228.

See footnotes at end of table.

Table 2.—Italy: Exports of selected mineral commodities[1] —Continued

(Metric tons unless otherwise specified)

Commodity	1982	1983	Destinations, 1983	
			United States	Other (principal)
NONMETALS —Continued				
Pyrite, unroasted	3,733	3,626	--	West Germany 2,119; France 775.
Quartz crystal, piezoelectric kilograms	8	60	NA	NA.
Salt and brine	474,284	262,584	12,620	Sweden 50,319; United Kingdom 47,950; Greece 45,743.
Sodium compounds, n.e.s.:				
Carbonate, manufactured	21,146	17,165	--	Israel 5,230; Greece 5,088.
Sulfate, manufactured	2,129	NA		
Stone, sand and gravel:				
Dimension stone:				
Crude and partly worked thousand tons	474	485	17	West Germany 65; Saudi Arabia 59; France 42.
Worked do	1,264	1,504	120	West Germany 446; Saudi Arabia 353.
Dolomite, chiefly refractory-grade do	32	37	(2)	Switzerland 16; France 9.
Gravel and crushed rock do	608	745	1	Kuwait 101; Switzerland 89; Libya 83.
Quartz and quartzite do	33	28	(2)	Switzerland 15; France 6.
Sand other than metal-bearing do	14	15	(2)	Sweden 6; Nigeria 2.
Sulfur:				
Elemental:				
Crude including native and by-product	4,912	7,298	--	Yugoslavia 4,613; France 1,371.
Colloidal, precipitated, sublimed	150	65	--	West Germany 21; Malta 20.
Dioxide	1,160	430	NA	NA.
Sulfuric acid	39,336	20,785	--	Greece 9,780; Spain 7,165.
Talc, steatite, soapstone, pyrophyllite	46,082	49,546	10,143	France 12,060; West Germany 11,057.
Vermiculite, perlite, chlorite	56,466	57,226	NA	United Kingdom 47,619.
MINERAL FUELS AND RELATED MATERIALS				
Asphalt and bitumen, natural	991	6,498	62	Nigeria 2,994; Libya 2,347.
Carbon: Carbon black	45,214	55,796	2	Yugoslavia 19,058; Austria 9,604.
Coal:				
Anthracite	3,608	3,867	--	France 3,243.
Bituminous	882	1,367	--	Switzerland 1,032.
Briquets of anthracite and bituminous coal	91	11	--	Switzerland 6.
Lignite including briquets	--	29	--	United Kingdom 22.
Coke and semicoke	377,662	347,867	--	Romania 185,298; Austria 55,577.
Gas, natural: Gaseous million cubic feet	1	2	--	Mainly to Greece.
Peat including briquets and litter	376	214	--	Algeria 54; Saudi Arabia 43.
Petroleum:				
Crude thousand 42-gallon barrels	255	1,641	--	West Germany 1,334.
Refinery products:				
Liquefied petroleum gas do	2,572	3,193	736	Greece 854; France 488.
Gasoline do	35,518	34,500	2,615	France 13,115; Libya 4,957.
Mineral jelly and wax do	48	454	2	Netherlands 399.
Kerosine and jet fuel do	24,373	9,685	56	Iran 2,741; Greece 1,712.
Distillate fuel oil do	34,438	24,542	38	Libya 6,011; Saudi Arabia 4,425.
Lubricants do	4,024	4,099	281	Belgium-Luxembourg 383; Netherlands 339; Iran 287.
Residual fuel oil do	32,800	16,213	717	Libya 4,997; Netherlands 2,781.
Bitumen and other residues do	1,066	991	(2)	Austria 279; Switzerland 195.
Bituminous mixtures do	29	49	--	Libya 28.
Petroleum coke do	62	234	--	Austria 115; Switzerland 99.

r Revised. NA Not available.
[1]Table prepared by Jozef Plachy.
[2]Less than 1/2 unit.

Table 3.—Italy: Imports of selected mineral commodities[1]

(Metric tons unless otherwise specified)

Commodity	1982	1983	Sources, 1983	
			United States	Other (principal)
METALS				
Aluminum:				
Ore and concentrate thousand tons	1,578	1,182	(2)	Australia 747; Guinea 312.
Oxides and hydroxides	69,545	305,591	384	Guinea 128,391; Australia 79,334.
Ash and residue containing aluminum	98,170	88,641	NA	Austria 72,520; France 6,985.
Metal including alloys:				
Scrap	94,224	108,485	399	Austria 28,890; France 25,141.
Unwrought	211,153	254,498	21	West Germany 79,988; Netherlands 49,226.
Semimanufactures	85,324	112,435	4,501	West Germany 46,764; France 26,698.
Antimony: Metal including alloys, all forms	252	177	NA	West Germany 110.
Arsenic: Metal including alloys, all forms	654	539	NA	Belgium-Luxembourg 303; West Germany 167.
Bismuth: Metal including alloys, all forms	39	39	NA	United Kingdom 33.
Cadmium: Metal including alloys, all forms	38	135	NA	NA.
Chromium:				
Ore and concentrate	159,431	192,211	--	Albania 120,233; Turkey 37,620.
Oxides and hydroxides	1,675	1,669	--	West Germany 1,284.
Metal including alloys, all forms	124	122	(2)	United Kingdom 83; France 22.
Cobalt: Metal including alloys, all forms	252	327	12	France 115; West Germany 61.
Copper:				
Ore and concentrate	491	2,214	--	Zaire 1,370.
Matte and speiss including cement copper	194	20	--	All from Belgium-Luxembourg.
Oxides and hydroxides	396	386	9	Norway 166; West Germany 91.
Sulfate	5,647	4,900	NA	Yugoslavia 4,071.
Ash and residue containing copper	3,887	4,482	NA	Austria 3,800.
Metal including alloys:				
Scrap	71,728	82,442	98	France 22,444; West Germany 22,244.
Unwrought	326,139	306,726	208	Chile 93,837; Zambia 47,461.
Semimanufactures	103,453	119,583	217	France 41,190; West Germany 40,159.
Germanium: Metal including alloys, all forms value, thousands	$86	$89	NA	NA.
Gold: Metal including alloys, unwrought and partly wrought thousand troy ounces	6,497	4,858	2	Switzerland 2,239; Republic of South Africa 2,136.
Iron and steel:				
Iron ore and concentrate excluding roasted pyrite thousand tons	16,066	13,799	--	Brazil 3,542; Liberia 3,305; Mauritania 2,038.
Metal:				
Scrap do	5,571	4,446	24	France 1,698; West Germany 1,624.
Pig iron, cast iron, related materials	425,148	333,071	69	U.S.S.R. 80,732; Algeria 56,612; France 53,076.
Ferroalloys:				
Ferrochromium	85,215	66,973	NA	Zimbabwe 28,344; Republic of South Africa 14,230.
Ferromanganese	114,113	64,719	--	France 22,773; Republic of South Africa 14,417.
Ferromolybdenum	1,355	1,066	NA	Belgium-Luxembourg 572.
Ferronickel	15,331	13,375	NA	France 6,158; Dominican Republic 2,560.
Ferrosilicochromium	2,497	1,273	NA	France 600; West Germany 366.
Ferrosilicomanganese	34,701	24,914	NA	Norway 15,062; Portugal 2,166.
Ferrosilicon	54,864	46,080	NA	France 13,527; West Germany 13,178.
Silicon metal	r5,392	13,724	NA	Norway 6,387; France 2,939; Brazil 822.
Unspecified	8,593	6,475	51	France 2,087; Sweden 2,033.
Steel, primary forms thousand tons	2,450	2,288	29	France 758; Belgium-Luxembourg 433.
Semimanufactures:				
Bars, rods, angles, shapes, sections do	792	748	(2)	France 202; West Germany 149.
Universals, plates, sheets do	1,283	1,318	28	France 372; Belgium-Luxembourg 244; West Germany 222.
Hoop and strip do	178	195	(2)	France 78; West Germany 58.
Rails and accessories do	106	128	4	West Germany 45; Canada 27.
Wire do	52	63	(2)	Belgium-Luxembourg 19; Czechoslovakia 11.

See footnotes at end of table.

Table 3.—Italy: Imports of selected mineral commodities[1] —Continued

(Metric tons unless otherwise specified)

Commodity	1982	1983	Sources, 1983	
			United States	Other (principal)
METALS —Continued				
Iron and steel —Continued				
Metal —Continued				
Semimanufactures —Continued				
Tubes, pipes, fittings thousand tons	206	198	1	France 69; West Germany 61.
Castings and forgings, rough do	7	8	(2)	France 2; West Germany 2.
Lead:				
Ore and concentrate	275	5,589	--	Turkey 3,404; Algeria 2,185.
Metal including alloys:				
Scrap	24,626	21,642	87	West Germany 6,714; Switzerland 4,829.
Unwrought	128,363	133,499	--	West Germany 31,814; Morocco 24,051.
Semimanufactures	2,152	2,863	11	Yugoslavia 2,519; France 132.
Lithium: Oxides and hydroxides	120	215	31	West Germany 96; Bulgaria 38.
Magnesium: Metal including alloys:				
Scrap	1,589	2,217	--	West Germany 785; France 481.
Unwrought	843	988	20	Norway 498; France 197.
Semimanufactures	644	1,188	98	France 438; Belgium-Luxembourg 397.
Manganese:				
Ore and concentrate, metallurgical-grade	333,063	385,550	--	Republic of South Africa 218,521; Gabon 129,355.
Metal including alloys, all forms	1,713	1,974	NA	France 731; Republic of South Africa 567.
Mercury 76-pound flasks	1,073	804	29	Netherlands 444.
Molybdenum:				
Ore and concentrate	2,768	2,360	431	Netherlands 932; Chile 577.
Metal including alloys:				
Scrap	18	19	NA	NA.
Unwrought	10	45	NA	Netherlands 35.
Semimanufactures	83	111	35	Netherlands 31; Austria 26.
Nickel:				
Matte and speiss	2,045	2,676	28	Cuba 1,400; Austria 390.
Oxides and hydroxides	2,430	2,300	NA	Cuba 1,710; Australia 370.
Metal including alloys:				
Scrap	320	143	--	Austria 84.
Unwrought	17,735	14,257	3,780	Netherlands 2,557; Australia 2,145.
Semimanufactures	2,472	7,536	5,489	West Germany 799; United Kingdom 638.
Platinum-group metals: Metals including alloys, unwrought and partly wrought thousand troy ounces	177	169	3	United Kingdom 54; Switzerland 49.
Rare-earth metals	136	63	NA	Austria 25; West Germany 12.
Selenium, elemental	14	29	NA	United Kingdom 19.
Silicon, high-purity	74	102	(3)	Norway 46; West Germany 14.
Silver: Metal including alloys, unwrought and partly wrought thousand troy ounces	18,979	10,227	1,051	West Germany 2,157; Belgium-Luxembourg 1,546.
Tellurium and arsenic, elemental	65	32	NA	Sweden 29.
Tin: Metal including alloys:				
Scrap	34	1	--	All from West Germany.
Unwrought	5,067	5,765	(3)	Indonesia 2,338; Malaysia 985.
Semimanufactures	209	233	1	West Germany 121; United Kingdom 62.
Titanium:				
Ore and concentrate	6,045	6,314	NA	Republic of South Africa 3,803; Australia 2,100.
Oxides	43,216	45,332	361	West Germany 18,279; France 8,922.
Metal including alloys:				
Scrap	1,336	1,740	NA	Austria 1,518.
Unwrought	48	43	NA	U.S.S.R. 35.
Semimanufactures	457	208	67	United Kingdom 63; West Germany 58.
Tungsten:				
Ore and concentrate	36	54	--	All from Canada.
Metal including alloys:				
Scrap	(3)	1	NA	NA.
Unwrought	47	23	NA	West Germany 9; France 8.
Semimanufactures	53	60	2	West Germany 19; United Kingdom 10.

See footnotes at end of table.

Table 3.—Italy: Imports of selected mineral commodities[1] —Continued

(Metric tons unless otherwise specified)

Commodity	1982	1983	Sources, 1983	
			United States	Other (principal)
METALS —Continued				
Vanadium:				
Oxides and hydroxides	123	106	NA	China 53; West Germany 23.
Ash and residue containing vanadium	2,646	1,923	NA	West Germany 657.
Metal including alloys, all forms	26	23	--	All from West Germany.
Zinc:				
Ore and concentrate	231,872	201,564	--	Canada 81,621; Peru 55,126.
Blue powder	777	1,626	--	West Germany 642; France 596.
Matte	5,487	5,768	NA	West Germany 2,481; Switzerland 1,315.
Metal including alloys:				
Scrap	6,883	11,001	--	France 5,613; West Germany 2,642.
Unwrought	79,343	95,715	--	West Germany 35,900; Belgium-Luxembourg 16,097.
Semimanufactures	2,585	4,704	(2)	West Germany 3,472; France 689.
Zirconium:				
Ore and concentrate	66,919	75,035	NA	Australia 44,722; Republic of South Africa 28,487.
Metal including alloys, all forms	52	29	17	France 4.
NONMETALS				
Abrasives, n.e.s.:				
Natural: Corundum, emery, pumice, etc	1,463	2,938	145	Greece 2,626.
Artificial:				
Corundum	23,601	21,448	379	Austria 6,104; West Germany 4,669.
Silicon carbide	7,739	9,477	NA	Switzerland 2,406; France 1,840; Norway 1,800.
Dust and powder of precious and semiprecious stones including diamond kilograms	1,730	2,219	568	Switzerland 843; Ireland 478.
Grinding and polishing wheels and stones	3,556	2,798	37	Austria 938; West Germany 496.
Asbestos, crude	56,884	41,620	306	Canada 13,590; Republic of South Africa 11,178.
Barite and witherite	10,328	14,424	--	Spain 8,750; Jordan 3,500.
Boron materials: Crude natural borates	103,795	153,527	9,104	Turkey 112,887; Netherlands 31,047.
Bromine	2,485	1,273	NA	Israel 1,202.
Cement	173,231	235,958	84	Yugoslavia 158,957; France 69,037.
Chalk	18,407	21,443	--	France 21,281.
Clays, crude:				
Bentonite	42,504	39,530	411	Greece 35,859.
Chamotte earth	94,894	69,614	NA	France 47,851; West Germany 11,589.
Kaolin	599,598	596,700	144,876	United Kingdom 256,110; West Germany 53,769.
Unspecified	715,642	728,689	1,493	West Germany 524,059; France 121,133.
Cryolite and chiolite	514	830	--	France 463; Denmark 336.
Diamond:				
Gem, not set or strung carats	196,650	171,443	NA	Belgium-Luxembourg 89,069; India 26,046.
Industrial stones do	169,727	114,613	--	Belgium-Luxembourg 78,823.
Diatomite and other infusorial earth	4,743	5,347	180	France 3,289; Spain 558.
Feldspar, fluorspar, related materials	82,877	124,098	213	Spain 47,283; Republic of South Africa 26,388; Canada 11,371.
Fertilizer materials:				
Crude, n.e.s	2,290	2,803	147	France 1,050; West Germany 844.
Manufactured:				
Ammonia	259,580	468,929	--	U.S.S.R. 323,362.
Nitrogenous	181,095	235,249	13,826	West Germany 62,101; Austria 61,831.
Phosphatic	123,531	114,063	10,649	France 42,762; Tunisia 32,099.
Potassic	510,906	615,142	67	Israel 186,886; U.S.S.R. 109,797.
Unspecified and mixed	627,620	818,837	262,217	Morocco 153,715; Tunisia 148,465.
Graphite, natural	5,117	4,064	20	West Germany 1,767; China 731.
Gypsum and plaster	14,923	11,619	801	West Germany 7,600; Austria 1,955.
Iodine	315	213	NA	Japan 130; Belgium-Luxembourg 38.
Kyanite and related materials	36,215	23,713	1,248	Republic of South Africa 11,373; West Germany 7,669.
Lime	336	631	--	Yugoslavia 319; West Germany 230.
Magnesium compounds: Magnesite	61,187	58,127	NA	Greece 4,227.
Mica:				
Crude including splittings and waste	981	896	179	France 301; Austria 102.
Worked including agglomerated splittings	346	345	19	France 89; Belgium-Luxembourg 82.
Nitrates, crude	671	1,911	--	Chile 1,500; West Germany 325.
Phosphates, crude thousand tons	1,162	1,554	246	Morocco 683; Israel 294; Togo 150.

See footnotes at end of table.

Table 3.—Italy: Imports of selected mineral commodities[1] —Continued

(Metric tons unless otherwise specified)

Commodity	1982	1983	Sources, 1983	
			United States	Other (principal)
NONMETALS —Continued				
Phosphorus, elemental	107	22	NA	NA.
Pigments, mineral:				
Natural, crude	404	565	--	Cyprus 177.
Iron oxides and hydroxides, processed	17,645	16,428	240	West Germany 12,543.
Potassium salts, crude	11,341	11,687	--	France 10,766.
Precious and semiprecious stones other than diamond:				
Natural kilograms	r65,617	57,125	2,511	Brazil 15,512; U.S.S.R. 8,408.
Synthetic do.	3,304	5,835	NA	West Germany 2,020; France 1,494.
Pyrite, unroasted	109,155	262,813	4	Norway 93,252; Finland 89,528.
Quartz crystal, piezoelectric kilograms	3,658	3,286	NA	NA.
Salt and brine	313,432	378,105	--	France 219,787; Tunisia 112,141.
Sodium compounds, n.e.s.: Carbonate, manufactured	92,088	39,931	--	Romania 13,315; Switzerland 9,939.
Stone, sand and gravel:				
Dimension stone:				
Crude and partly worked	611,967	661,368	4,314	Spain 160,103; Finland 99,518; Brazil 67,944.
Worked	4,634	5,301	113	Spain 1,484; Greece 968.
Dolomite, chiefly refractory-grade	1,658	1,699	--	West Germany 958; Netherlands 381.
Gravel and crushed rock	19,009	14,277	212	France 8,337; Yugoslavia 2,408.
Limestone other than dimension	150	75	--	All from West Germany.
Quartz and quartzite	48,489	43,196	91	Switzerland 33,268.
Sand other than metal-bearing	1,027,000	989,902	507	France 541,208; Belgium-Luxembourg 227,170.
Sulfur: Elemental:				
Crude including native and byproduct	375,588	464,907	54,404	Saudi Arabia 155,977; Canada 64,499; France 60,911.
Colloidal, precipitated, sublimed	1,238	961	--	West Germany 758; France 99.
Talc, steatite, soapstone, pyrophyllite	20,479	22,944	2	Austria 13,736; France 4,300.
MINERAL FUELS AND RELATED MATERIALS				
Asphalt and bitumen, natural	780	963	877	France 41.
Carbon: Carbon black	24,758	28,703	880	France 16,585; West Germany 6,654.
Coal:				
Anthracite thousand tons	295	110	--	Republic of South Africa 50; U.S.S.R. 38.
Bituminous do.	17,579	15,666	7,075	Republic of South Africa 3,034; Poland 2,209.
Lignite including briquets do.	79	76	(2)	Yugoslavia 43; West Germany 28.
Coke and semicoke do.	203	98	--	France 64; West Germany 32.
Gas, natural million cubic feet	518,850	602,106	--	U.S.S.R. 308,260; Netherlands 206,217.
Petroleum:				
Crude thousand 42-gallon barrels	570,908	537,536	--	Saudi Arabia 93,083; Iran 88,983; Libya 82,275.
Refinery products:				
Liquefied petroleum gas do.	9,675	10,423	1,255	Algeria 2,362; West Germany 1,583; Libya 836.
Gasoline do.	16,545	24,004	28	Kuwait 5,470; Algeria 3,196; U.S.S.R. 2,747.
Mineral jelly and wax do.	207	252	3	Hungary 72; West Germany 58.
Kerosine and jet fuel do.	242	649	75	Brazil 534.
Distillate fuel oil do.	30,712	32,300	645	Algeria 8,900; Romania 7,832; Kuwait 5,830.
Lubricants do.	793	906	36	Greece 159; West Germany 137.
Residual fuel oil do.	96,290	114,140	3,339	Kuwait 23,873; Venezuela 14,887; France 8,151.
Bitumen and other residues do.	1,364	1,209	1,058	Netherlands 94.
Bituminous mixtures do.	8	30	1	France 25.
Petroleum coke do.	5,401	10,379	8,996	U.S.S.R. 670; United Kingdom 301.

[r] Revised. NA Not available.
[1] Table prepared by Josef Plachy.
[2] Less than 1/2 unit.

COMMODITY REVIEW

METALS

Copper.—The Fenice Capanne Mine, Province of Tuscany, operated by Solmine S.p.A., ended its production toward the end of 1984 because of low prices for copper and difficult mining conditions.

Iron and Steel.— The Government-owned steel companies posted losses, although smaller than those of 1983. On the other hand, the privately owned Falck reported a sales increase of 28%. Steel output of Falck was 1,006,661 tons or 11.5% higher than that of 1983.

At the iron and steel works at Taranto, a new control system was introduced that totally automated converter production. The new method cuts production time and reduces consumption of ferroalloys, refractories, and oxygen. At Taranto, a new installation for controlling the speed of large electric motors went on-stream. This is the first time that an installation of this kind was used in Italy.

Lead and Zinc.—Lead-zinc mines operated by SAMIM, Pertusola, and Mineraria Silius S.p.A. produced about 57% of the primary lead metal consumed and about 25% of primary zinc metal. The rest was imported.

At the Masua Mine, located about 9 kilometers west-northwest of Iglesia in Sardinia and operated by SAMIM, production reached about 667,000 tons of lead-zinc ores. The Marx and Alice deposits were in production. At the modernized flotation plant, which started production at the beginning of 1984, 31,688 tons of zinc concentrates, 10,366 tons of lead concentrates, and 4,462 tons of mixed-lead-zinc concentrates were produced. During the year, work on developing a third mining field of the Marx deposit was under way. It included work on service and transportation ramps with a conveyor belt and storage bins on level 130. In addition, radio-operated underground loading equipment was introduced. Ornella gallery remained the main haulageway of the operation. Exploration has confirmed sulfide ores in deeper zones, below level 30, in the Marx and Alice deposits.

At the Raible underground and opencast mine, located about 5 kilometers south of Tarvisio in the Province of Friuli, operated by SAMIM, about 342,000 tons of lead-zinc ores were produced and a flotation plant recovered 21,550 tons of zinc concentrates and 2,780 tons of lead concentrates. The Raible Mine started to use the power produced in its own hydropower plants, which covered about 50% of the mine's power consumption.

In the so-called Monteponi project, the administrative functions were centralized for three mines, Monteponi, San Giovanni, and San Benedetto, located in the general area of Iglesia in the Province of Sardinia, and operated by SAMIM. In addition, work on constructing centralized auxiliary facilities for all three mines continued. The flotation plant at Campo Pisano, with various workshops, was the focal point. Approximately 50% of the construction was completed. From the Monteponi project mine, output included sulfide and semioxidized ores. Production of sulfide ores reached 135,683 tons, along with 2,489 tons of semioxidized ores. From these quantities, the flotation plant recovered 7,580 tons of zinc concentrates and 999 tons of lead concentrates. The aim of the Monteponi project was to increase the total production of all three operations to 1 million tons of ore from which concentrates with 65,000 tons of zinc and lead metal will be recovered.

Magnesium.—Production of 84,500 tons of dolomite, from which 7,491 tons of magnesium metal were produced, came from the Dosseni Mine, Province of Trento, operated by the Società Italiana per il Magnesio e Leghe di Magnesio S.p.A. Mining was carried out in the upper part of the opencast mine and was hampered by large intercalations of sterile materials.

Pyrite.—The Niccioleta Mine in the Province of Tuscany, operated by Solmine, stopped production during the fall.

NONMETALS

Asbestos.—The only producer of asbestos in Italy was the opencast mine Balangero, also known as the San Vittore Mine, owned and operated by the Amiantifera di Balangero S.p.A. The Balangero Mine was located near the small village of Balangero near Lonzo, about 50 kilometers north of Turin in the foothills of the Alps at about 1,200 meters altitude. The Balangero Mine produced 147,272 tons of asbestos fiber from about 2.1 million tons of ores. For protection of the environment by lowering the amount of dust, an automatic system for watering the dump site went into operation at Balangero Mine. In the asbestos plant, an

installation for dedusting the air was brought on-stream.

Barite.—At the beginning of 1984, barite was produced by six companies; Bariosarda Co., Edem Co., Società Edem Sarda, Baroyd S.A., Mineraria Baritina S.p.A., and Mineraria Silius. However, activities of Baroyd were taken over by Società Edem Sarda and Bariosarda, which left five companies producing barite in Italy at yearend.

At Barega and Mont'Ega Mines, both in the Province of Cagliari, exploration resulted in discoveries of minor barite reserves. Output was 243,900 tons of crude barite, from which was recovered 37,500 tons of coarse barite and 21,200 tons of floated barite. In addition, in the Barega Mine about 107 meters of a ramp with a cross section of 16 square meters was built. At Mont'Ega, 308 meters of a ramp were constructed also with a cross section of 16 square meters. Mining was by sublevel caving and stoping.

In the Val di Castelo Mine owned by Edem, located near Pietrasanta in the Province of Lucca, 24,560 tons of raw minerals were mined and 11,700 tons of barite for drilling needs were recovered. Exploration resulted in discoveries of new mineralized zones.

Exploration in the Felice zone of the Marigole Mine, owned by Mineraria Baritina, uncovered new mineralized areas of excellent quality, and during 1984, Marigole recorded an increase of reserves. Output at Marigole was 12,000 tons of barite.

Fluorspar.—Almost all acid-grade fluorspar was produced in mines operated by Mineraria Silius. The metallurgical-grade was produced in mines located in the Provinces of Lazio, Bergamo, and Trentino.

At the Gennas Tres Montes e Muscadraxiu Mine in Sardinia operated by Mineraria Silius about 110,300 tons of acid-grade fluorspar was produced. Large-scale exploration was under way in the area of the mine. Production of metallurgical-grade fluorspar totaled 77,331 tons. Upgrading of ores from the mines in Lazio was difficult because of the fine dispersion of fluorspar in the ore.

Potash.—In Italy, potash was produced by two companies, Italkali S.p.A. and Ispea S.p.A. All active mines were located in Sicily. Lower potash production in 1984 resulted from gradual decline of production at the San Cataldo Mine where reserves are being exhausted. As part of a reorganization of the potash sector, management of the plant at Pasquasia was assigned to Italkali. At Pasquasia, a new conveyer belt entered into service. The conveyer belt for transporting ores out of the mine has been installed in a ramp and has replaced a skip in shaft No. 1.

At the Realmonte Mine, Sicily, a new conveyer belt in the entry ramp entered into service. The construction of a gallery under the village of Realmonte continued to open up the main deposit of kainite.

Salt.—Salt was produced by solution mining and as a byproduct of potash mining from facilities operated by Società Solvay S.p.A., Italkali, and Montedipe S.p.A.

At the solution mines of Ponte Ginori, Buriano, and Quercianella, located in Valdi Cecina, Province of Pisa, production reached 1,780,000 tons of salt. The salt solution was piped to Solvay's plant at Rosignano where it was used for production of chemicals.

At the Timpa di Salto solution mine in the Province of Calabria, operated by Montedipe, output reached 413,000 tons of salt in solution. The salt solution was pumped through a pipeline to a chemical plant located at Ciro Marina. During the year, production was stopped at state request because the subsidence of the ground caused leakage of saline solution on the surface.

The byproduct salt was mostly produced in Italkali's underground potash mines at Petralia, Racalmuto, and Realmonte, located in Sicily. Production was about 1,061,700 tons of salt. Higher output from that of 1983 resulted from better demand for salt.

Talc.—About 43% of total talc production was from mines located in Piedmont and Sardinia and operated by the Talco Graphite Valchisone S.p.A. The rest of the production came from mines in the region of Sondrio operated by the Mineraria Valle Spluga S.p.A. and from mines in the Province of Bolzano. The largest talc mine owned and operated by Talco Graphite Valchisone, was the Fontana underground mine, which produced 41,235 tons of talc during 1984. The Fontana Mine was located in the Alps, 35 kilometers northwest of the mill, and the talc mill was built on the Chisone River about 30 kilometers north of Pinerolo, the rail terminus in Piedmont. Talc occurred in veins ranging from a few centimeters to several meters thick. Stoping with cement filling was replacing the old mining method, and a new production field between levels 1,300 and 1,320 was prepared

for production.

MINERAL FUELS

Italy remained a large importer of coal, crude oil, and natural gas. As in the past, domestic production was far below the country's demand.

Coal.—Two lignite mines, Santa Barbara in Tuscany and Pietrafitta in Umbria were the only producers of lignite. Overburden landslides caused problems in the Santa Barbara Mines. However, production showed a slight increase. Work on reopening the Sulcis Mines in Sardinia was still in the phase of studies at yearend.

Petroleum and Natural Gas.—Domestic production of crude oil and natural gas was below demand. About 1.2% of crude oil and 9% to 10% of natural gas demand were met by domestic output. Exploration for crude oil and natural gas continued. A total of 188,949 meters in 84 exploration wells and 102,434 meters in 31 development wells were drilled onshore and offshore throughout Italy. Major oil and gas fields brought into production were Canaldente, Province of Matera; Melanico, Province of Foggia; and Crude del Vento, Province of Ancona. Most of the development drilling was in the field at Porto Corsini, Cervia-Arianna, in the Adriatic, and at Vega and Mila near Sicily.

The downward trend in petroleum refinery output continued. A committee, formed of representatives of the private and public sector, suggested streamlining the country's petroleum refining sector. The Italian petroleum refining sector was being forced to adjust its production to meet a declining domestic demand that at the same time favored light products. To balance capacities with the future demand for refinery products, the committee suggested three courses of action: (1) Forbid building new primary refinery capabilities, (2) void all permits given to closed refineries, and (3) grant fiscal and other relief to companies that reduce their primary capacities and conduct research on more effective refining methods.

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[1]Physical scientist, Division of International Minerals.

[2]Where necessary, values have been converted from Italian lire (Lit) to U.S. dollars at the rate for 1984 of Lit1,757 = US$1.00.

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